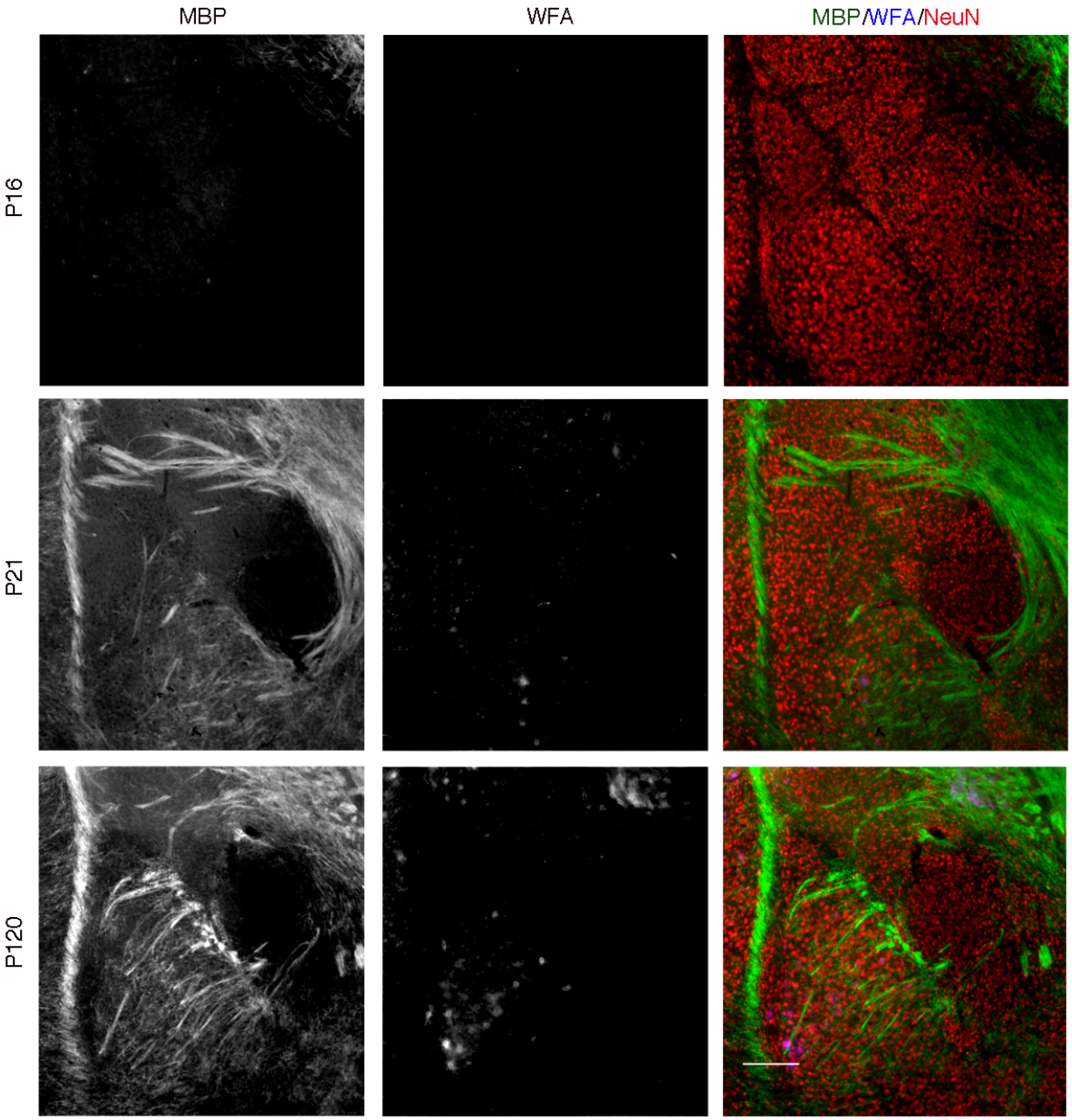
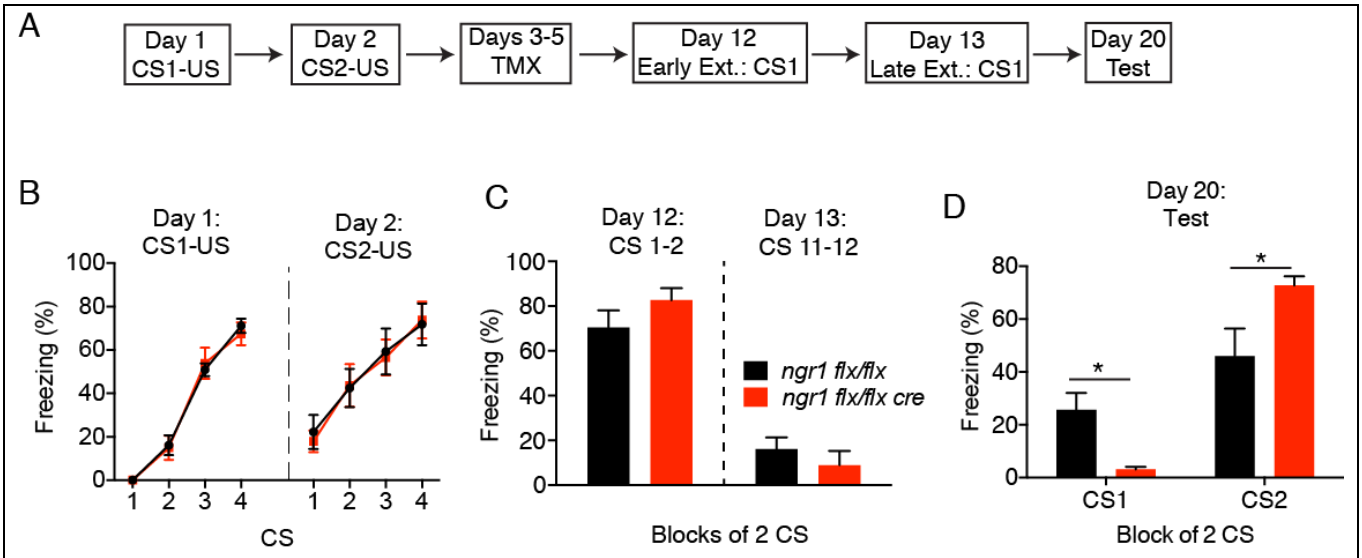
Supplemental Materials

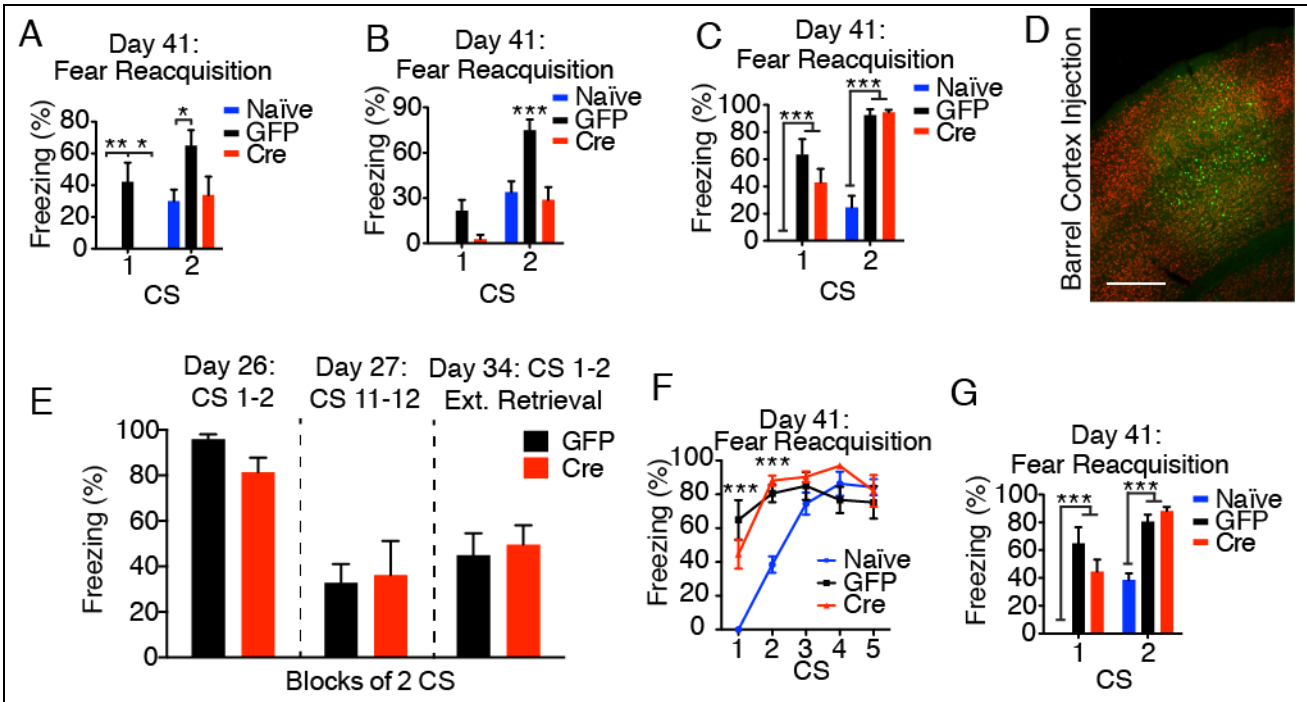
Supplemental Figures 1-4



Supplemental Figure 1. Myelination and formation of PNNs begin after P16 and increase into adulthood.
Changes in myelin (MBP; green), PNNs (WFA; blue) at P16, P21, and P120 in the BLA (NeuN; red). Scale bar, 250 μm.

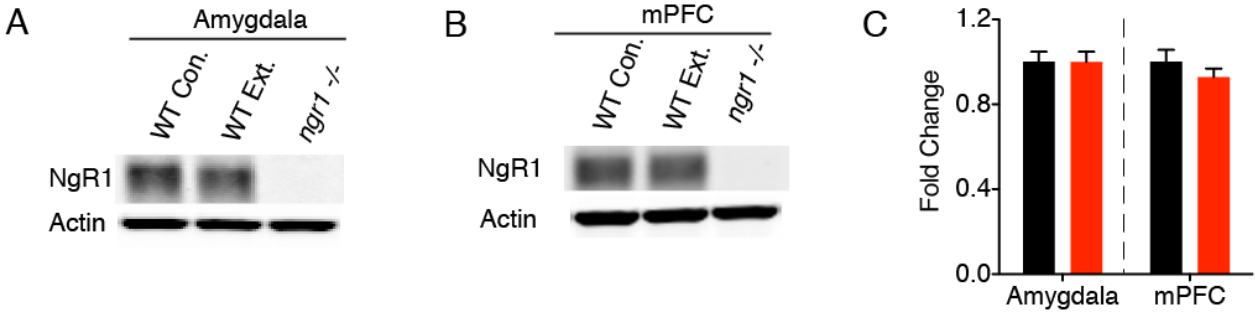


Supplementary Figure 2. NgR1 produces cue selective elimination of fear expression after extinction training (A) The behavioral paradigm conditions mice to CS1 and CS2, then deletes NgR1, and extinguishes only for CS1 before testing freezing to both CS1 to CS2. (B) The *ngr1 flox/flox* mice and *ngr1 flox/flox cre* mice condition equally to both CS1 and CS2. (C) One week after tamoxifen treatment, mice are extinguished to CS1. (D) One week after extinction, the control *ngr1 flox/flox* mice show spontaneous recovery of CS1 fear, unlike the mice expressing Cre. The control mice also show less freezing to CS2, compared to the *ngr1 flox/flox cre* mice (n=8 per genotype). Two-way ANOVA reveals statistically significant interaction ($F(1, 14)=17.57$, $P=0.0009$). Bonferroni corrected *post hoc* analysis reveals that *ngr1*-/- mice show decreased freezing to CS1 and increased freezing to CS2 compared to controls. *P<0.05; **P<0.01; ***P<0.001, error bars represent SEM.



Supplemental Figure 3 (Related to main Figure 4). Deleting NgR1 from either BLA or IL is sufficient to restore complete elimination of fear memories after extinction training.

(A-C) The data of Fig. 3D, 3G, 3J**,** from the first two CS during fear reacquisition are replotted to illustrate the details of the *post hoc* statistical differences. Bonferroni corrected *post hoc* pairwise analysis reveals significant differences at indicated time points. (A, B) Mice injected with AAV-Cre-GFP into BLA (A) or IL (B) show a complete absence of fear renewal and naïve-levels of reacquisition, unlike AAV-GFP treated mice. (C) AAV-Cre injected into PL does not alter fear renewal or reacquisition compared to GFP virus, supporting the IL-specific regulation of NgR1 in fear extinction. (D) Injecting AAV-Cre-GFP (green) into barrel cortex (red, NeuN) does not create any changes in (E) extinction retrieval or (F) fear reacquisition (two-way ANOVA with repeated measures, (group x time); group: $F(2, 112) = 7.6$, $P = 0.007$; time: $F(4, 48) = 40.7$, $P<0.0001$; interaction between group and time: $F(8, 48) = 10.8$, $P<0.0001$). Scale bar, 250 μm. *P<0.05; **P<0.01; ***P<0.001, error bars represent SEM.



Supplemental Figure 4 (Related to main Figure 5). Cortical NgR1 protein expression 30 minutes after extinction training.

(A) Immunoblot analysis shows that expression of NgR1 in the amygdala and (B) mPFC is not changed 30 minutes after the second day of extinction (C).